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PATENT COOPERATION TREATY c'd PCT/PTO 07 JUL 2005

In re application of: LUPKE, Manfred A. A. et al
Application No.: PCT/CA02/01957
Filing Date: December 19, 2003
Priority Date: January 10, 2003
Title: FLOW DISTRIBUTOR FOR DIE TOOLING OF PIPE MOLD EQUIPMENT WITH REMOTE EXTRUDER

Our Reference: SWH-11923-1WO Dennison Associates
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March 23, 2005

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EUROPEAN PATENT OFFICE
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Attention: Examiner Munoz N. Lorenete

Dear Sir:

This is further the Written Opinion received January 28, 2005 with respect to the above-identified application. Kindly amend the application as follows:

IN THE CLAIMS

Replace the claims now on file with the new claims enclosed herewith.

REMARKS

Claims 1 through 3 of the application have been amended to clarify the operation of the system.

In the present application a flow distributor is provided at an upstream location relative to the die tooling and controls the feed of molten plastic to the mouth of the die passage. The die passage is part of the die tooling and is used to carry the molten plastic to a die outlet in the molding region where the pipe is shaped. Thus, according to the present invention the flow distributor is provided upstream of the die tooling and controls the feed of molten plastic to the ring shaped mouth of the internal die passage of the die tooling. The internal die passage carries the molten plastic to an outlet point in the molding region where the pipe is shaped. This flow distributor is helpful in that the plastic supply which provides the molten plastic for making of the pipe is located remotely of the

die tooling. This particular arrangement has certain benefits as outlined in the application but additionally creates problems with respect to the even distribution of the molten plastic about the die outlets. The flow distributor as defined in the present application and located upstream of the die tooling overcomes these deficiencies.

The primary reference does not operate on this basis and merely provides a host of distribution channels 14 all of equal length which provide the molten plastic material to the common annular gap. As shown in Figure 1 of the reference, this distributor member is provided at the molding region and forms part of what would be considered the die tooling. Furthermore, it can be appreciated that the extruder is in close proximity to the die tooling as clearly shown in Figure 3. Also note that the flow distributors are shown as 13a and 13b and are in the molding region in direct contradiction to the flow distributor as defined in the present claims. Furthermore, it is noted that the primary reference operates on a completely different principle. The principle of this reference is to provide a series of equal length passages such that the passages through the device are all equal and therefore the flow leaving of each passage should be equal. This requires a host of passages as clearly shown in the drawings of the patent and description which discloses fourteen (14) different passages which have basically been divided from a common supply stream. There is no suggestion of any separate adjustable mechanism for this device and in fact, this would be in contradiction to the reference as the passages would no longer be equal. Adjusting of any one of the many passages would not be helpful or effective. It is therefore submitted that this primary reference teaches away from the invention as presently claimed and is only of interest.

The secondary references do not teach the adjusting of a flow distributor in the particular location as required by the claims. European application 363716 merely discloses an adjustment mechanism 52 for varying the position of the bushing 26. As stated in column 4 lines 45 through 54, this adjustment merely allows for centering of the mandrel 20 in hollow chamber 12. There is certainly no teaching of a flow distributor provided at an upstream portion of the die tooling as required in the present application.

United States Patent 4,362,482 is directed to a different concept and is associated with adjusting the flow in individual tubes to provide equal cooling. In direct contradiction to the present application the various flows are recombined into a central flow upon exit of the cooler. This reference is only of interest and again would teach away from the particular flow distributor provided at the upstream location of the die tooling and the adjustability thereof for allowing adjustments in the distribution to produce the even distribution in the molding region at the outlet of the die passage or passages.

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In view of the above reconsideration of the claims is requested.

Respectfully submitted,


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SWH:jmc
Enclosure

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. Equipment used in the molding of plastic pipe, said equipment comprising a plastic supply which provides molten plastic for making the pipe, die tooling having an internal die passage to carry the molten plastic to a molding region where the pipe is shaped, the die tooling having an upstream end fitted with a flow distributor the die passage having a ring shaped mouth covered by the flow distributor at the upstream end of the die tooling, the plastic supply being located remotely of the die tooling and said equipment including a plastic feed from the plastic supply to the flow distributor, the flow distributor having a first plastic flow path which is adjustable to vary the distribution the molten plastic from the plastic supply around the ring shaped mouth of the die passage to produce an even distribution of the molten plastic from the die passage at the molding region.
2. Equipment as claimed in Claim 1 wherein said die tooling includes a second die passage having a ring shaped mouth which is outwardly around the mouth of the first die passage and which is also covered by the flow distributor, the flow distributor having a second plastic flow path which is adjustable to vary the distribution of the molten plastic from the plastic supply around the mouth of the second die passage to produce an even distribution of the molten plastic from the second die passage at the molding region.
3. Equipment as claimed in Claim 2 wherein said flow distributor comprises a plate secured to the upstream end of said die tooling, said plate including a first plate portion which feeds through the first plastic flow path to the mouth of the first die passage and a second plate

portion which feeds second plastic flow path to the mouth of said second die passage, said first and second plastic flow paths both being adjustable and being adjustable independently of one another.

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4. Equipment as claimed in Claim 2 wherein said plastic supply comprise a single extruder and wherein said plastic feed comprises a single conduit from said extruder to first and second supply branches of said plastic supply, said first supply branch feeding to the first plastic flow path of the flow distributor around the mouth of the first die passage, the second supply branch feeding to the second plastic flow path of the flow distributor around the mouth of the second die passage.

5. Equipment as claimed in Claim 2 wherein said plastic supply comprises first and second extruders, said plastic feed comprising a first conduit from said first extruder to the first plastic flow path of said flow distributor around the mouth of said first die passage and a second conduit from said second extruder to the second plastic flow path of said flow distributor around the mouth of said second die passage.

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6. Equipment as claimed in Claim 2 wherein said plastic supply comprises first and second extruders, said plastic feed comprising a first conduit from said first extruder and a second conduit from said second extruder, a first supply branch feeding to the first plastic flow path of the flow distributor around the mouth of the first die passage, a second supply branch feeding to the second plastic flow path around the mouth of the second die passage, and a connecting branch between said first and second supply branches, both said first and said second conduits from said first and second extruders